

Name: _____

- 1) Which type of bond is predominant in a water molecule?
 - A) polar covalent
 - B) metallic
 - C) ionic
 - D) coordinate covalent
- 2) Which molecule is nonpolar?

A) $\text{H} - \text{Cl}$	C) $\begin{array}{c} \text{N} \\ \diagup \quad \diagdown \\ \text{H} \quad \text{H} \\ \\ \text{H} \end{array}$
B) $\text{O} = \text{C} = \text{O}$	D) $\begin{array}{c} \text{O} \\ \diagup \quad \diagdown \\ \text{H} \quad \text{H} \end{array}$
- 3) What type of bond exists in a molecule of hydrogen iodide?
 - A) a polar covalent bond with an electronegativity difference between zero and 1.7
 - B) a nonpolar covalent bond with an electronegativity difference of zero
 - C) a nonpolar covalent bond with an electronegativity difference between zero and 1.7
 - D) a polar covalent bond with an electronegativity difference of zero
- 4) Which structural formula represents a polar molecule?

A) $\begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} - \text{H} \\ \\ \text{H} \end{array}$	C) $\begin{array}{c} \text{H} - \text{N} - \text{H} \\ \\ \text{H} \end{array}$
B) $\text{S} = \text{C} = \text{S}$	D) $\text{N} \equiv \text{N}$
- 5) Which of the following bonds exhibits the *greatest* ionic character?

A) $\text{H} - \text{Cl}$	C) $\text{H} - \text{I}$
B) $\text{H} - \text{F}$	D) $\text{H} - \text{Br}$
- 6) Which molecule contains a polar covalent bond?

A) $\text{H} \times \text{H}$	C) $\begin{array}{c} \times \times \\ \times \times \text{N} \times \times \\ \times \times \\ \text{H} \end{array}$
B) $\begin{array}{c} \times \times \\ \times \times \text{N} \times \times \\ \times \times \end{array}$	D) $\begin{array}{c} \times \times \times \times \\ \times \times \text{I} \times \times \text{I} \times \times \\ \times \times \end{array}$
- 7) Which type of bond is formed between the two chlorine atoms in a chlorine molecule?
 - A) nonpolar covalent
 - B) metallic
 - C) ionic
 - D) polar covalent
- 8) Which is a nonpolar molecule containing a nonpolar covalent bond?

A) I_2	C) NH_3
B) H_2O	D) CO_2
- 9) Which two compounds contain only polar molecules?

A) CCl_4 and CH_4	C) CO and CO_2
B) HCl and Cl_2	D) HCl and NH_3
- 10) Which combination of atoms can form a polar covalent bond?

A) H and H	C) Na and Br
B) H and Br	D) N and N
- 11) Which molecule is nonpolar due to a symmetrical distribution of charge?

A) $\begin{array}{c} \text{O} \\ \diagup \quad \diagdown \\ \text{H} \quad \text{H} \end{array}$	C) $\text{O} = \text{C} = \text{O}$
B) $\text{H} - \text{Cl}$	D) $\begin{array}{c} \text{H} - \text{N} - \text{H} \\ \\ \text{H} \end{array}$
- 12) Which type of bond is formed between the carbon and oxygen atoms in a CO_2 molecule?
 - A) electrovalent
 - B) ionic
 - C) nonpolar covalent
 - D) polar covalent
- 13) Which substance contains a polar covalent bond?

A) HCl	C) KCl
B) Cl_2	D) H_2
- 14) Which formula represents a polar molecule?

A) LiBr	C) KBr
B) NaBr	D) HBr

15) Which structural formula represents a nonpolar molecule?

- A) $\text{H}-\text{H}$ C) $\begin{array}{c} \text{H}-\text{O} \\ | \\ \text{H} \end{array}$
- B) $\begin{array}{c} \text{H}-\text{N}-\text{H} \\ | \\ \text{H} \end{array}$ D) $\text{H}-\text{Cl}$

16) The shape and bonding in a diatomic bromine molecule are *best* described as

- A) symmetrical and polar
B) asymmetrical and nonpolar
C) asymmetrical and polar
D) symmetrical and nonpolar

17) Which molecule is nonpolar?

- A) CO_2 C) NH_3
B) H_2O D) CO

18) Which molecule contains a nonpolar covalent bond?

- A) $\text{C}\equiv\text{O}$ C) $\begin{array}{c} \text{Cl} \\ | \\ \text{Cl}-\text{C}-\text{Cl} \\ | \\ \text{Cl} \end{array}$
- B) $\text{O}=\text{C}=\text{O}$ D) $\text{Br}-\text{Br}$

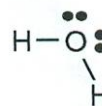
19) Which formula represents a nonpolar molecule?

- A) NH_3 C) H_2O
B) CF_4 D) HCl

20) Which type of molecule is CF_4 ?

- A) polar, with an asymmetrical distribution of charge
B) nonpolar, with a symmetrical distribution of charge
C) nonpolar, with an asymmetrical distribution of charge
D) polar, with a symmetrical distribution of charge

21) Which pair of characteristics describes the molecule illustrated below?



- A) symmetrical and polar
B) asymmetrical and nonpolar
C) asymmetrical and polar
D) symmetrical and nonpolar

22) Which molecule contains a nonpolar covalent bond?

- A) $\text{Br}-\text{Br}$ C) $\text{O}=\text{C}=\text{O}$
- B) $\begin{array}{c} \text{Cl} \\ | \\ \text{Cl}-\text{C}-\text{Cl} \\ | \\ \text{Cl} \end{array}$ D) $\text{C}\equiv\text{O}$

23) Which of these formulas contains the *most* polar bond?

- A) $\text{H}-\text{I}$ C) $\text{H}-\text{Cl}$
B) $\text{H}-\text{F}$ D) $\text{H}-\text{Br}$

24) Which formula represents a nonpolar molecule?

- A) NH_3 C) H_2S
B) HCl D) CH_4

25) Which Lewis electron-dot diagram is correct for CO_2 ?

- A) $\begin{array}{c} \times \times \\ \text{O} : \text{C} : \text{O} \\ \times \times \end{array}$ C) $\begin{array}{c} \times \times \\ \text{O} : \times \text{C} \times : \text{O} \\ \times \times \end{array}$
- B) $\begin{array}{c} \times \times \\ \text{O} \\ \times \times \\ \times \text{C} : \text{O} : \\ \times \times \end{array}$ D) $\begin{array}{c} \times \times \\ \text{O} \\ \times \times \\ \times \text{C} \times : \text{O} : \\ \times \times \end{array}$